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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,312	02/27/2004	Siti Arija Mad Arif	SIRIM-007XX	9773

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EXAMINER	
ROONEY, NORA MAUREEN	
ART UNIT	PAPER NUMBER
1644	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/789,312	MAD ARIF ET AL.	
	Examiner	Art Unit	
	Nora M. Rooney	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-47* is/are pending in the application.

4a) Of the above claim(s) *18-21,25,31-39,46 and 47* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *22-24 26-30 and 40-45* is/are rejected.

7)☒ Claim(s) *22-24* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/17/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 18-47 are pending.

2. Claims 1-17 have been cancelled.

3. Applicant's election without traverse of Group II, now claims 22-30 and 40-45 and the species of SEQ ID NO:5 encoded by SEQ ID NO:1 filed on 10/03/2006 is acknowledged. Claim 25 has been withdrawn from consideration as it drawn to a non-elected species.

4. Claims 18-21, 25, 31-39 and 46-47 are withdrawn from further consideration by the Examiner, 37 C.F.R. § 1.142(b) as being drawn to non-elected inventions.

5. Claims 22-24 and 26-30 and 40-45 are currently under examination as they read on the isolated nucleic acid of SEQ ID NO:1 encoding the protein of SEQ ID NO:5.

6. Applicant's IDS filed on 5/17/2004 is acknowledged.

7. Applicant's certified copy of the priority document (PI 20030734) filed on 05/03/2004 is acknowledged.

Claim Objections

8. Claims 22-24 are objected to because of the following informalities: Claims 22-24 depend upon non-elected claims 18 and 21. Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 22-30 and 40-45 are rejected under 35 U.S.C. 112, first paragraph, first paragraph, because the specification, while being enabling for the nucleic acid of SEQ ID NO:1 encoding the protein of SEQ ID NO:5 and a method of producing the protein of SEQ ID NO:5 using the nucleic acid of SEQ ID NO:1 , does not reasonably provide enablement for a method for **An isolated nucleic acid molecule encoding the protein of claim 18** in claim 22; **An isolated nucleic acid molecule encoding the peptide of claim 21** in claim 23; The nucleic acid molecule of claim 22, **comprising** the nucleotide sequence of SEQ ID NO:I in claim 24; A vector **comprising the nucleic acid molecule of any of claims 22-25** in claim 26. The vector of claim 26, wherein said vector is an expression vector in claim 27. **A host cell** transfected with the vector of claim 27 in claim 28. The host cell of claim 28, wherein the organism of said host cell

is Escherichia coli in claim 29. A method of expressing a protein comprising the step of culturing the isolated host cell of claim 28 under conditions in which said nucleic acid molecule is expressed, thereby expressing said protein in claim 30; A method for producing a protein in recombinant form, said method comprising the steps of: (a) inserting **the nucleic acid molecule of claim 22** into an appropriate vector; and (b) inducing the vector to express said recombinant protein in claim 40. The method of claim 40, wherein the vector is a microorganism, a plant or an animal in claim 41. The method of claim 41, wherein the microorganism is a bacterium, a virus or a yeast in claim 42. The method of claim 42, wherein the bacterium is Escherichia coli in claim 43. The method of claim 40, wherein, in step (b), said vector is exposed to an inducer in claim 44. The method of claim 44, wherein said inducer is isopropyl thiogalactoside (IPTG) in claim 45.

The specification disclosure does not enable one skilled in the art to practice the invention without an undue amount of experimentation.

Factors to be considered in determining whether undue experimentation is required to practice the claimed invention are summarized *In re Wands* (858 F2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)). The factors most relevant to this rejection are the scope of the claim, the amount of direction or guidance provided, the lack of sufficient working examples, the unpredictability in the art and the amount of experimentation required to enable one of skill in the art to practice the claimed invention.

On pages 7-20 of the specification the nucleic acid of SEQ ID NO:1 encoding the protein of SEQ ID NO:5 method is disclosed. Experiments were performed by isolating and purifying the protein from Hevea brasiliensis trees; characterizing physical

properties by mass spectroscopy and isoelectric focusing, sequencing, demonstrating allergenicity by Western blot and and cloning of cDNA.

The art acknowledges that function cannot be predicted based solely on structural similarity to a protein found in the sequence databases and recognized that it was unpredictable if any functional activity will be shared by two polypeptides having less than 100% identity over the full length of their sequences. Attwood (Science 2000; 290:471-473, PTO-892, Reference U) teaches that "[i]t is presumptuous to make functional assignments merely on the basis of some degree of similarity between sequences. Similarly, Skolnick et al. (Trends in Biotech. 2000; 18(1):34-39, PTO-892, Reference V) teach that the skilled artisan is well aware that assigning functional activities for any particular protein or protein family based upon sequence homology is inaccurate, in part because of the multifunctional nature of proteins (e.g., "Abstract" and "Sequence-based approaches to function prediction", page 34). Even in situations where there is some confidence of a similar overall structure between two proteins, only experimental research can confirm the artisan's best guess as to the function of the structurally related protein (see in particular "Abstract" and Box 2). Even single amino acid differences can result in drastically altered functions between two proteins.

The specification does not provide sufficient support for the nucleic acid "comprising" the sequence of SEQ ID NO:1 in claim 24. The term "comprising" is open ended and broadens the claims to encompass many more peptides/proteins than the specification provides enablement for with unlimited amino acids added to the N- and/or C-terminals of the peptide.

The specification does not provide sufficient enablement for the term "host cell" in claim 28 because the "host cell" encompasses in vivo use. Therefore, "host cell" should be changed to "isolated host cell" so the enablement of the specification is commensurate with the scope of the claims.

The specification disclosure does not enable one skilled in the art to practice the invention without an undue amount of experimentation.

Reasonable correlation must exist between the scope of the claims and scope of the enablement set forth. In view on the quantity of experimentation necessary the limited working examples, the nature of the invention, the state of the prior art, the unpredictability of the art and the breadth of the claims, it would take undue trials and errors to practice the claimed invention.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 22-23, 26-30 and 40-45 are rejected under 35 U.S.C. 103(a) as being anticipated by Yeang et al. (IDS filed on 5/17/2004) as evidenced by Arif et al. (PTO-892, Reference X) in view of Villalba et al (PTO-892, Reference W) and Sowka et al. (IDS filed 5/17/2004).

Yeang et al. teaches a highly allergenic new B-serum latex allergen of 42.98 kDa with high homology to the early nodule-specific protein (ENSP) of soya bean (Glycine Max). (In particular, page 39, first full paragraph). Arif et al. is an evidentiary reference having three common authors showing that the protein of the Yeang et al. is the same protein of Arif et al. having an identical amino acid sequence to SEQ ID NO:5 of the instant application. (In particular, see Abstract, page 23934 first full paragraph, Figure 3 and entire document)

The claimed invention differs from the reference teaching by the recitation of an isolated nucleic acid molecule encoding the protein of SEQ ID NO:5, a vector comprising the nucleic acid molecule encoding the protein of SEQ ID NO:5; wherein the vector is an expression vector; wherein a host cell is transfected with the vector; where in the host cell organism is Escherichia coli; a method of expressing the protein comprising culturing the isolated host cell under conditions in which the nucleic acid molecule encoding the protein of SEQ ID NO:5 is expressed; a method of producing the protein of SEQ ID NO:5 in recombinant form comprising the steps of inserting the nucleic acid molecule encoding the protein of SEQ ID NO:5 into an appropriate vector and inducing the vector to express the recombinant protein; wherein the vector is a microorganism, plant or an animal; and wherein the microorganism is a bacterium, a virus or a yeast; wherein the bacterium is Escherichia coli.

Villalba et al. teaches the cloning and sequencing of 'Ole e 1', a major allergen of Olive Tree pollen. (In particular, materials and methods pages 15217-15218). The purified Ole e 1 allergen was isolated and sequenced. Oligonucleotide primers were synthesized based upon the allergen amino acid sequence. (In particular, page 15218, first full paragraph). The amplified cDNA fragment was digested and incoporated into a pUC18 plasmid vector (In particular, page 15218, second full paragraph). The cDNA clone was subcloned into a pGEX-2T expression vector and transformed in to DH5αF'

E. coli host cells. The DH5αF' host cells were cultured and induced with isopropyl β-D-thiogalactosidase to produced recombinant Ole e 1 protein.

Sowka et al. teaches in the last paragraph on page 218 that because the allergens of latex (Specifically, Hev b 7) are only a minor component of latex B-serum, obtaining sufficient amounts of the purified protein is difficult. Therefore, recombinant latex proteins present an economical alternative to preparation from Brevea brasiliensis sap.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the method of Villalba et al. to produce the allergen of SEQ ID NO:5 of **Yeang et al.** in order to include the isolated nucleic acid molecule encoding the protein of SEQ ID NO:5, a vector comprising the nucleic acid molecule encoding the protein of SEQ ID NO:5; wherein the vector is an expression vector; wherein a host cell is transfected with the vector; where in the host cell organism is Escherichia coli; a method of expressing the protein comprising culturing the isolated host cell under conditions in which the nucleic acid molecule encoding the protein of SEQ ID NO:5 is expressed; a method of producing the protein of SEQ ID NO:5 in recombinant form comprising the steps of inserting the nucleic acid molecule encoding the protein of SEQ ID NO:5 into an appropriate vector and inducing the vector to express the recombinant protein; wherein the vector is a microorganism, plant or an animal; and wherein the microorganism is a bacterium, a virus or a yeast; wherein the bacterium is Escherichia coli.

One of ordinary skill in the art at the time the invention was made would have been motivated to do so, because the protein of SEQ ID NO:5 as taught by Yeang et al. can be produced by the method taught by Villalba et al because Sowka et al. teaches that because allergens of latex are only a minor component of latex B-serum, obtaining sufficient amounts of the purified protein is difficult and that recombinant latex proteins present an economical alternative to preparation from Brevea brasiliensis sap. The strongest rationale for combining references is a recognition, expressly or impliedly in the prior art or drawn from a convincing line of reasoning based on established scientific

principles or legal precedent, that some advantage or expected beneficial result would have been produced by their combination. In re Semaker. 217 USPQ 1, 5 - 6 (Fed. Cir. 1983). See MPEP 2144.

From the combined teaching of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

15. No claim is allowed.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nora M. Rooney whose telephone number is (571) 272-9937. The examiner can normally be reached Monday through Friday from 8:30 am to 5:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (571) 272-0841. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 5, 2007

Nora M. Rooney, M.S., J.D.

Patent Examiner

Technology Center 1600

MICHAIL BELYAVSKYI, PH.D.
PATENT EXAMINER

1/5/07